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Art Unit 1742

Amendments to Claims

Please amend ~~the claims as follows:~~

1. (currently amended) A flow-through electrochemical reactor comprising:

a body having an internal chamber, and an inlet port and an outlet port in communication with said internal chamber to permit a forced flow of wastewater therethrough, said inlet port and outlet port in sealing engagement with the internal chamber;

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at least one porous anode arranged in said internal chamber such that the wastewater flowing between said inlet port and said outlet port flows through the pores of said at least one porous anode, said at least one porous anode having activity for the destruction of a target substance; and

at least one porous cathode disposed in the internal chamber to permit an electric current to be established between said at least one cathode and said at least one anode, said electric current reducing the concentration of said target substance in the wastewater flowing through the chamber, wherein the anode and cathode each have a pore size to withstand a forced flow of wastewater up to 60 litres/min.

2. (original) A flow-through electrochemical reactor according to claim 1, wherein the porous anode comprises a foam.

3. (original) A flow-through electrochemical reactor according to claim 1, wherein the porous anode comprises a substrate coated having an anodic coating.

4. (original) A flow-through electrochemical reactor according to claim 3, wherein the substrate is tantalum or titanium.

5. (original) A flow-through electrochemical reactor according to claim 3, wherein the anodic coating is selected from the group consisting of platinum, tantalum-doped iridium dioxide and antimony-doped tin dioxide.

6. (cancelled)

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7. (currently amended) A flow-through electrochemical reactor according to claim ~~6~~ 1, wherein the porous cathode comprises a foam.

8. (original) A flow-through electrochemical reactor according to claim 1, wherein the cathode comprises nickel.

9. (currently amended) A flow-through electrochemical reactor according to claim 1, wherein the body is tubular and the internal chamber is generally cylindrical, and wherein each anode and cathode is supported by an insulating holder ~~sized to be slidably inserted~~ to avoid displacement of the anode and cathode ~~into~~ the internal chamber.

10. (cancelled)

11. (cancelled)

12. (cancelled)

13. (currently amended) A flow-through electrochemical reactor according to claim ~~12~~ 1, wherein the ~~aryl compound is selected from the group consisting of~~ target substance is phenol, o-cresol, m-cresol ~~and~~ or p-cresol.

14. (currently amended) A flow-through electrochemical reactor according to claim ~~13~~ 1, wherein the ~~aryl compound is phenol~~ target substance is phenol, o-cresol, m-cresol or p-cresol, mixed with other organic and/or inorganic compounds.

15. (new) A flow-through electrochemical reactor according to claim 1, wherein the body is tubular and the internal chamber is generally cylindrical, further comprising electrode holders sized to provide a snug fit within the tubular body so that substantially all the flowing wastewater passes through each anode and cathode.

16. (new) A flow-through electrochemical reactor according to claim 1, wherein the anode and cathode are each sized to withstand a forced flow of wastewater up to about 8

litres/min, which corresponds to a volume of wastewater to treat of about 32.8 litres of solution per volume litre of reactor.

17. (new) A flow-through electrochemical reactor according to claim 4, wherein the anode has a diameter of about 1.5 m and a thickness of about 0.5 cm.

18. (new) A flow-through electrochemical reactor according to claim 1, wherein the anode and cathode each comprise an opened thick metallic network covered by a conductive coating.

19. (new) A flow-through electrochemical reactor according to claim 18, wherein the conductive coating is chosen from the group consisting of platinum, palladium, rhadium, iridium, ruthenium, antimony-doped tin dioxide, tantalum-doped iridium dioxide, and alloys thereof, the coating being obtained by an electrochemical deposition method.

20. (new) A flow through electrochemical reactor according to claim 18, wherein the conductive coating is chosen from the group consisting of platinum, palladium, rhadium, iridium, ruthenium, antimony-doped tin dioxide, tantalum-doped iridium dioxide, and alloys thereof, the coating being obtained by a thermal decomposition method.

21. (new) A flow-through electrochemical reactor according to claim 18, wherein the conductive coating is made of one to several coats of said conductive coating.

22. (new) A flow-through electrochemical reactor system comprising:

a reservoir for storing wastewater;

an electro-chemical cell defining an internal chamber, the chamber having a sealed inlet port and a sealed outlet port;

a pump for providing a forced flow of wastewater to be treated from the reservoir to the chamber via the inlet port, and for allowing treated wastewater to exit the chamber via the outlet port; and

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an anode and a cathode electrically coupled and disposed within the chamber, such that when the forced flow of wastewater flows through the chamber, the wastewater comes in contract with the anode and cathode for treatment to remove contaminants therefrom, wherein the anode and cathode each have a pore size to withstand a forced flow of wastewater up to 60 litres/min.

23. (new) A method of treating wastewater to remove contaminants therefrom using an electrochemical cell, the method comprising the steps of:

storing wastewater in a reservoir;

pumping to provide a forced flow of wastewater to be treated from the reservoir to a chamber of the electrochemical cell, the wastewater being pumped to the chamber via a sealed inlet;

electrically coupling a multiple of porous anodes and cathodes positioned in an alternating arrangement within the chamber, there being one extra cathode than anode; and

treating the wastewater using the porous anodes and cathodes, each having a pore size to withstand a forced flow of wastewater up to 60 litres/min, the treated wastewater exiting the chamber via a sealed outlet port.